

What is claimed is:

1 1. In a receiver that receives a modulated signal having
2 multiple levels and having an equalizer with plural
3 equalization settings for compensating for distortion in
4 the received signal, a method of selecting one of the
5 plural equalization settings that provides an optimum
6 compensation for the distortion, comprising:

7 (A) for each one of the equalizer settings:
8 setting the equalizer to the one setting;
9 defining valid regions encompassing each of the
10 multiple levels of said modulated signal and invalid
11 regions not encompassing the multiple levels;
12 computing a first metric comprising a count of
13 samples within said invalid regions;
14 computing a second metric comprising
15 differences less than a predetermined threshold between
16 pairs of samples falling within the same valid region;
17 combining the first and second metrics to
18 produced a combined metric for said one setting;
19 (B) choosing the equalizer setting corresponding to
20 the best combined metric.

1 2. The method of Claim 1 wherein said invalid regions
2 lie generally between the valid regions.

1 3. The method of Claim 1 wherein each valid region
2 includes a range of amplitudes within a predetermined
3 fraction of the amplitudes of the corresponding multiple
4 level.

1 4. The method of Claim 1 wherein each invalid region
2 includes a range of amplitudes deviating by more than a
3 predetermined fraction of a peak amplitude from the
4 corresponding multiple level.

1 5. The method of Claim 3 wherein the predetermined
2 threshold corresponds to a fraction less than the
3 predetermined fraction.

1 6. The method of Claim 5 wherein the predetermined
2 fraction corresponds to 10% and the predetermined
3 threshold corresponds to 5%.

1 7. The method of Claim 1 wherein each of the pairs of
2 samples falling within the valid region comprise two
3 samples occurring successively.

1 8. The method of Claim 7 wherein a sample intervening
2 chronologically between the two successive samples but
3 not falling within the same valid region is ignored for
4 purposes of determining successive samples.

1 9. The method of Claim 1 wherein the first metric is a
2 measure of the deviation of samples from valid signal
3 levels of the multistate signal and the second metric is
4 a measure of the consistency of samples about each valid
5 signal level.

1 10. The method of Claim 1 wherein the combined metric is
2 a difference between said first and second metrics.

1 11. The method of Claim 10 wherein the best combined
2 metric is the least positive or most negative metric.

1 12. The method of Claim 1 wherein the combined metric is
2 a ratio between said first and second metrics.

1 13. The method of Claim 1 wherein each equalizer setting
2 corresponds to a different transfer function of the
3 equalizer.

1 14. The method of Claim 1 wherein each transfer function
2 corresponds to a unique set of poles and zeroes
3 corresponding to a particular reactance.

1 15. The method of Claim 1 wherein the step of computing
2 the second metric is carried out for sample pairs in each
3 of the valid regions, the number of differences not
4 exceeding the threshold being summed across all valid
5 regions.

1 16. A receiver that receives a modulated signal having
2 multiple levels, said receiver comprising:

3 an equalizer with plural equalization settings for
4 compensating for distortion in the received signal; and

5 an adapter for selecting one of the plural
6 equalization settings that provides an optimum
7 compensation for the distortion at the output of the
8 equalizer, said adapter comprising:

9 means for setting the equalizer to the one
10 setting;

11 means for defining valid regions encompassing
12 each of the multiple levels of said modulated signal and
13 invalid regions not encompassing the multiple levels;

14 means for computing a first metric comprising a
15 count of samples within said invalid regions;

16 means for computing a second metric comprising
17 differences less than a predetermined threshold between
18 pairs of samples falling within the same valid region;

19 means for combining the first and second
20 metrics to produced a combined metric for said one
21 setting and choosing the equalizer setting corresponding
22 to the best combined metric.

1 17. The receiver of Claim 16 wherein said invalid
2 regions lie generally between the valid regions.

1 18. The receiver of Claim 16 wherein each valid region
2 includes a range of amplitudes within a predetermined
3 fraction of the amplitudes of the corresponding multiple
4 level.

1 19. The receiver of Claim 16 wherein each invalid region
2 includes a range of amplitudes deviating by more than a
3 predetermined fraction of a peak amplitude from the
4 corresponding multiple level.

1 20. The receiver of Claim 18 wherein the predetermined
2 threshold corresponds to a fraction less than the
3 predetermined fraction.

1 21. The receiver of Claim 20 wherein the predetermined
2 fraction corresponds to 10% and the predetermined
3 threshold corresponds to 5%.

1 22. The receiver of Claim 16 wherein each of the pairs
2 of samples falling within the valid region comprise two
3 samples occurring successively.

1 23. The receiver of Claim 22 wherein a sample
2 intervening chronologically between the two successive
3 samples but not falling within the same valid region is
4 ignored for purposes of determining successive samples.

1 24. The receiver of Claim 16 wherein the first metric is
2 a measure of the deviation of samples from valid signal
3 levels of the multistate signal and the second metric is
4 a measure of the consistency of samples about each valid
5 signal level.

1 25. The receiver of Claim 16 wherein the combined metric
2 is a difference between said first and second metrics.

1 26. The receiver of Claim 25 wherein the best combined
2 metric is the least positive or most negative metric.

1 27. The receiver of Claim 16 wherein the combined metric
2 is a ratio between said first and second metrics.

1 28. The receiver of Claim 16 wherein each equalizer
2 setting corresponds to a different transfer function of
3 the equalizer.

1 29. The receiver of Claim 28 wherein each transfer
2 function corresponds to a unique set of poles and zeroes
3 corresponding to a particular reactance.

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